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BONELLI'S WARBLER IN SWITZERLAND.

By W. Warde Fowler, M.A.

These notes are put together for the benefit of those who have not yet made the acquaintance of *Phylloscopus Bonellii*, the only one of the four common *Phylloscopi* of Central Europe which has never been observed in this country. It has been long expected; it is a hardy little bird, breeding in the Alps up to some 5000 ft. above sea-level: it has occurred at least twice on Heligoland, and a quarter of a century ago it was thought to be extending its range northwards. Yet, so far as I am aware, no one has ever found it in Great Britain or Ireland.

It was always a favourite of mine in the time long past when I used to be in Switzerland for a few days at least almost every year in June or early July; but since the death of my old guide and naturalist friend Johann Anderegg I had not been there until this June, and the only specimen of *Bonelli* that I have seen in recent years was one which came on board the ill-fated 'Argonaut' as I was crossing in her from Sicily to Greece on April 16th, 1905. This date, by the way, tallies well with what Prof. Fatio writes ('Oiseaux de la Suisse,' i. 458) of its arrival in the alpine region, that it reaches Switzerland in the second half of April or even in May. I have myself met with it on April 28th at Meiringen in a spot which I knew to be a favourite breeding-place, and two days later I found it near Säckingen on the southern border of the Black Forest. This

year, 1909, being free in June, I felt a great desire to see and hear it again, and in the two of its old haunts which I was able to visit I was not disappointed.

Anyone, in fact, who knows where to look for it and learns to recognize its unobtrusive notes is sure to find it in fair abundance in June. It is in my experience decidedly the commonest Warbler in Switzerland, unless perhaps we except the Garden Warbler; and of the *Phylloscopi* it is quite the most abundant on heights from 1000 to 5000 ft. This year I met with it about a dozen times in a fortnight, while I found the Wood-Wren but twice, the Chiffchaff once, and the Willow-Wren not at all. The last two species are indeed by no means really uncommon, but *Bonelli* and the Wood-Wren, which are closely allied to each other in several ways, and have both the same liking for steep wooded hillsides, are in the mountains the most abundant of the four.

In looking for *Bonelli*, there is no need to stray from roads or paths. It seems to have a particular fancy for low cover by the side of a high road, either immediately above or below it, on some steep bank. This year I noticed that it seemed to be specially fond of hazels; anyhow, I have rarely found it among pines, and I think the reason is that, like the Wood-Wren, it likes to have the assistance of the dead leaves of deciduous trees in concealing its nest under a stone or projecting clod. Its habit, too, is to be continually on the move in low cover or bush, where it finds the insects on which it feeds. One might suppose that southern England would suit it, at least as well as it suits the Wood-Wren, though the latter is more addicted to large woods of oak or beech.

This June I went direct from England to the Hotel Bellevue at Thun, where the large garden is full of birds, some of them so tame that they will hop into your bedroom and demand largess. Above this garden there rises steeply a hill covered with deciduous trees, where, on June 18th, 1891, I was able to introduce this bird to my friend Mr. O. V. Aplin, who, with a stroke of genius, almost instantly discovered its nest, with young. This was one of the only three nests I have seen; it consisted chiefly of roots and dry grass, and was lined with a few hairs. It is one of the points of resemblance between *Bonelli*

and the Wood-Wren that neither of them ever uses feathers for the lining of the nest. I have only once been lucky enough to find the egg, *i. e.* on June 15th, 1889; as a rule, I have been too late in reaching Switzerland. My note records that this was a beautiful one, dull white in ground colour, with rich chocolate-coloured spots, chiefly at the larger end. This agrees fairly well with Prof. Fatio's description of the egg, except that he writes of the spots as being "gris et bruns."

This year, June 8th, I found *Bonelli* again rather higher on the steep hillside above Thun; the old familiar gentle sibilation caught my ear at once in the hazels, and while we waited, the bird, doubtless the male, continued to move about from point to point without once letting you see it. The hen, I imagine, was on the nest, and when this is the case, her consort seems to be constantly on the move, sometimes retiring to a distance for a few minutes, then returning, but never betraying the situation of the nest. All the time the gentle sibilation goes on; sometimes with notes distinctly uttered, almost recalling those of the Lesser Whitethroat (only never so loud), sometimes so hurriedly as to become a kind of subdued hiss. Fatio syllables the sound as "pi-hui-hui-hui," or simply "hui-hui-hui-hui"; but, as a rule, the repetition of the note is more frequent, in my experience, and I should prefer to write at least five or six of these "hui's." They are something like the slower notes at the end of the Wood-Wren's song; and it was interesting to find this latter bird five minutes' walk further on, and so to be able to compare the two utterances. *Bonelli* has not the loud sweet call of the Wood-Wren, but the alarm-notes of the two are much alike (*thûi*, as Fatio renders them), and I found later on this year that, when really alarmed for a nest containing young, *Bonelli* can utter a louder wail which is almost enough to induce even an enthusiast to abandon his search. The nest of the bird I have just been describing escaped me; it probably contained eggs, and when that is the case, the difficulty is great, owing to the hundreds of suitable spots all around you of which one is just as likely as another to be the right one. When the eggs are hatched, the birds are so busy with the work of feeding that they readily betray their secret.

So at least I found a day or two later, June 11th, when we

had moved from Thun to the hotel at the top of the Brünig Pass, rather less than 4000 ft. above the sea. Here, just before it reaches the railway station, the road is skirted for some twenty or thirty yards by a miniature precipice of rock, hewn perpendicularly to make room for it, and about ten feet high, with a steep bank above it covered with hazel bushes. I heard *Bonelli's* sibilation here at once, and sat down on the opposite side of the road to watch. Very soon I found that the nest, in which the birds were feeding young with insects, was in a little hollow exactly at the top of the rock, just where it fitted into the steep grassy bank—a curiously conspicuous place, and one which human beings are constantly passing. But the birds did not seem at all alarmed, and showed themselves to me as I have never known them do before; both together being sometimes at the nest, while I sat watching their proceedings but a few yards away. It was not possible to climb the ten feet of smooth rock, but a day or two later we explored the nest by executing a flank movement. It was composed outside chiefly of moss—of course, with the hole in the side—and deftly hidden under a projecting stone; the young birds were crammed into it, and it was very wet with heavy rain, so we abstained from taking them out to note the nature of the lining, which was no doubt as usual of dry grass and hairs without feathers.

At other spots along the road, such as I have described above, we met with *Bonelli* again, but were unable, in spite of minute search in at least one place, to find another nest; nor did I again have such good opportunity of observing the parent birds. I may say, in conclusion, that the outward appearance of *Bonelli* is slightly different, to my eye at least, from that of the other three *Phylloscopi*; the upper parts are greyer than those of Chiffchaff and Willow-Wren in the breeding season, and the wash of yellow on the under parts is barely visible to the eye, even with the aid of a glass. There is a faint eye-stripe, but you have to look carefully for it. For other details I must refer the reader to the excellent account of Prof. Fatio, quoted above. As with most of these little Warblers, the voice is really the one easily attainable point of identification; and I think that when this has been once heard, it can never, in spite of its unobtrusive gentleness, be mistaken or forgotten.

AMERICAN EGRETS AS VICTIMS TO FASHION.

By Dr. A. Menegaux, Assistant, Muséum d'Histoire Naturelle, Paris.

[Translated by the Author from a communication to 'La Nature,' March, 1909.]

It is known that in Europe there are two species of a genus of Wading Birds belonging to the Heron group to which the name of Egrets is applied on account of the ornamental plumes arranged in a bunch on their back, namely, the Great White Heron or Large Egret (*Ardea alba*, L.) and the Little Egret (*Garzetta garzetta* [L.]). Their distribution embraces nearly all the Old World, and they are a little larger in size than similar species of America.

The Large American Egret or *Garza blanca* of South America (*Herodias egretta* (Wilson) or *Ardea leuce*, Licht.) greatly resembles her sister of the Old World. Like her, she is of a beautiful white colour, but the ornamental plumes which both sexes possess are longer and have a thicker stem. The bare parts of the tibiæ are always black, like the tarsi and claws. The lores are chrome-yellow, as is the bill, which often in the case of the sitting bird is marked by a continuous black line along the culmen. The "aigrettes," which go beyond the tail, appear in July to mark the breeding plumage, and they fall in October when the young leave their parents. It follows that the winter plumage is the same as that of summer, with the exception that the ornamental plumes are wanting. The young have a white downy plumage, without aigrettes. The male attains to a total length of thirty-eight inches.

The Snowy Heron, Little American Egret or *Chumita* of the indigenous breeds (*Leucophoyx* or *Ardea candidissima*, Gm.), is much smaller in size than the one above referred to, *viz.* twenty inches. The body is entirely white, but the bill is black, except at the base of the lower mandible. The lores are

yellow and the tibiæ and tarsi black. The ornamental plumes, produced by both sexes, thus form a train on the back, and are of great delicacy. They are arched at the point towards the tip and in front, owing to which they have been termed "crosses" by the trade. On the nape is a crest, a tuft of fine elongated plumes, "non-recurved-like," on the fore neck. These are more developed in the male than in the female. In winter both sexes lose these beautiful feathers. The young bird has an occipital crest before it produces the dorsal feathers of the adult.

These two species of Egrets are found throughout the whole of the temperate and tropical zones of America, from the United States to Chili and Patagonia. They live in colonies consisting of thousands upon thousands of birds, in heronries established in the lagoons which form rivers at the time of periodic rise. These families are particularly numerous in the immense lagoons and marshes formed by the Orinoco and its affluents, which can only be reached by the boats called "pirogues" in the midst of hordes of Caimans, whose length varies from sixteen to twenty-three feet. These waters are also inhabited by numerous ferocious and voracious fishes, the *Pirayes* and the *Caribes*, always on the alert to seize and devour anything that comes in their way. The slightest movement of the water attracts them by the thousand. Woe to the young Egrets and even to the imprudent hunter who comes within the reach of the Caimans.

It is the large Egret which is the first to nest about the beginning of July. The small species does not arrive until the young of the large species have left the nest in October. The nests of both species are made of dry twigs; they are flat, placed three or six feet above the water-level on the mangroves, guava, and other marsh-trees, where the vegetation is very dense. The nest of the large Egret is from eight to ten inches in diameter, and contains two or three blue eggs. The nest of the smaller species is built nearer the water, but it is of the same construction, and has either two or three bluish eggs. These are not hatched until the end of November.

Among these colonies various nests are found belonging to the Roseate Spoonbill (*Ajaja ajaja*, L.), to the Crested Boat-bill (*Cancroma cochlearia*, L.), to the Anhingas (*Plotus anhinga*, L.), to the Red Ibis, and, lastly, to the American Wood Ibis (*Tantalus*

loculator, L.). The last-named build on the tops of masses of foliage, where they break the twigs to form a kind of platform for their nests. All this busy multitude, fully engaged in searching for food and for rearing their young, fill the air with their cries which are as deafening as manifold.

From July to October, during the nesting and rearing season, the male and female possess their ornamental feathers; those of the male of the large species are the longer, and have a thicker stem than those of the female. In the male of the smaller species the tip of the feathers is very strongly curved, whereas in the female it is scarcely arched. In France these feathers are named in the trade "aigrettes" and "crosses," whereas in England they are known as "ospreys." They are made up in small packets of forty sprays, which are called "parures" or "sets"; the small Egret produces forty to fifty sprays, weighing a little more than one gramme. A thousand sprays weigh an ounce (thirty grammes); it takes thirty-three thousand sprays to make a kilo. The "ospreys" of the Asiatic species are heavier, as it only requires eight hundred of them to make the ounce and twenty-seven thousand the kilo. With the large species it is just the opposite. The Egrets of the American variety are heavier; each bird produces from forty-five to sixty, weighing 6·5 to 8 grammes. Two hundred and forty of these go to the ounce and eight thousand to the kilo, whereas in the case of feathers of Asiatic origin three hundred go to the ounce or ten thousand to the kilo.

The wholesale price of these feathers is very variable, even during the course of a year. According to the requirements of fashion it may rise to eighty francs per ounce for "aigrettes" or two thousand seven hundred francs per kilo, and two hundred and fifty francs an ounce for "ospreys" or eight thousand three hundred francs per kilo; but these prices may fall to almost nothing when they are out of fashion.

The chief country producing these feathers is Venezuela, where they are also sent from Colombia and from Brazil. It is stated that the incursions by the natives have already diminished the number of Egrets in these regions; but it is well to guard against any exaggeration, as there is no need to make holocausts of Egrets to obtain their ornamental feathers. In fact, M. Geay,

who lived for many years in Venezuela, in Darien, in French Guiana and in Conteste, ascertained that the breeding plumage of these birds is ephemeral, and that this decoration which appears in July has all fallen off by October. This also takes place with the Chumita, but somewhat later. During the moulting season each year beautiful feathers may be seen scattered about in large numbers on the bushes and under the trees in the neighbourhood of the lagoons and small watercourses where these birds fish daily, and which are frequently situated at a considerable distance from their heronries. The natives gather these feathers (which would otherwise be wasted) up by the pound and sell them, consequently neither of the two species suffer any detriment. When these feathers are picked up in good time they are, says M. Geay, as beautiful as those taken from the killed birds. Under no circumstances are they plucked from the living bird.

M. Geay assures us that the huntsmen always spare the young birds which have no ornamental feathers, and that in a heronry the young orphans are never abandoned, but are fed by the neighbours. These birds in this matter furnish us with a touching example of social solidarity.

To manage such a source of revenue it is evident that the heronries must not be depopulated by the huntsmen. Only we must not admit without convincing proofs that the existence of both species, distributed on so vast a scale, can be jeopardised by hunting excursions conducted during a comparatively short period in such restricted areas as those they affect. The conditions in the Old and New World are very far from being the same, and the protective measures necessary in the Old World may indeed not be indispensable in the New.

The decrease which it is thought has been ascertained is more likely due to a change of domicile of the birds caused by hitherto uninhabited regions having become the home of man. These birds, when leaving places that had become too noisy or dangerous owing to the vicinity of man, would look for some inaccessible spots where their security would appear to be greater. This would therefore be a particular case in a general fact, the withdrawal of the wild species on the advance of man.

The caprice of fashion can hardly be more than a very

secondary cause; its exigencies are so uncertain in their periodicity and duration, and cause such fluctuations in price, that the plumage of one species is at one time enormously costly, and at another the prices are so low that the search for feathers becomes unremunerative and ceases altogether. It is then that the species finds time to recuperate. This is the case at the present moment in regard to Humming-Birds, at one time in such great demand.

Under these circumstances, it would seem that the Bill, accepted by the English House of Lords and referred back to the House of Commons, the object of which is to restrict decorative birds to those used for purposes of food, and which would prohibit in England the importation and sale of the plumage of all those species that serve for decoration alone, would overstep the purpose in view, and would be seriously detrimental to the trade and to feather-dressers. This is a very complex question, towards the solution of which still further information seems essential.

As to Egrets, the real remedy would probably lie in domestication, by means of which these two species would lose their migratory instinct, just as tame Ducks and Geese have lost it. The difficulties would not be insurmountable, but probably much less than those which the English colonists at the Cape have had to overcome in domesticating the Southern Ostrich. Various attempts have already been made, but they have not been persevered in for a sufficiently long period.

On this subject the Editor reprints a Leaflet issued by "The Royal Society for the Protection of Birds," which bears a different construction :—

Dealers in plumes are circulating statements to the effect that the Egret or "Osprey" plumes are moulted feathers, and that the birds are not killed in order to procure them. In particular a letter is being largely disseminated both in England and Australia, headed "Importation of Plumage Prohibition Bill.—How the Osprey Feathers are Procured." It is in imitation type-writing, signed "Leon Laglaize," and dated "Buenos Ayres, July 29th, 1908," but there is no indication of the persons to whom it is addressed or by whom it is

circulated. This letter professes to give an account of regions in Venezuela and Argentina where, it says, the birds are strictly protected in the nesting-time by "a sort of armed police composed of natives," the impression conveyed being that these vast *llanos*, covered by the flood-waters of the great rivers, resemble English shooting preserves where patrolling keepers warn off the village poacher. It further states that "the natives in charge paddle their canoes, circulating under the trees, and go on picking up the feathers that have fallen into the water during the night"; also that after the breeding season a "valuable amount of feathers" is collected from the abandoned nests: "The feathers have been skilfully rolled in to furnish and soften the interior. These nest-feathers are of the best kind, for they have been pulled off by the bird itself before laying the eggs."

In order to test the amount of truth in this document, and in similar stories, the Royal Society for the Protection of Birds has obtained the facts of the case from H.B.M.'s Ministers in Venezuela and Argentina, and from well-known scientific authorities in other parts of the world where Egrets breed and "Osprey" hunters are at work. The letters are printed in the Society's Leaflet No. 60, "Moulted Plumes." The following extracts contain the pith of the matter:—

Sir Vincent Corbett, H.B.M. Minister at Caracas, writes (Jan. 14th, 1909):—"From the evidence before me I have no manner of doubt that the vast majority of the Egret plumes exported to Europe are obtained by the slaughter of the birds during or about the breeding season, and that no effective regulations exist or indeed, owing to local conditions, can exist for the control of this slaughter, and that the letter of Mr. Leon Laglaize, of July 29th, 1908, gives a *completely erroneous* impression of the conditions under which the industry of collecting the plumes is conducted in Venezuela."

The information enclosed, coming from several correspondents, states:—"In the Tucacas district the coast is one continuous mangrove swamp intersected by creeks. At certain times of the year flocks of Egrets, returning from their feeding-grounds, pass over these swamps in the evening. Shooting parties, armed with all sorts of nondescript firearms, wait for them up the creeks, and when overhead fire a volley right into the middle of the flock. The dead and wounded birds are then collected, the plumes torn out, and the bodies thrown back into the water. The large 'garceros' are those of the Orinoco frequented by the birds during certain months of the year. The owners no doubt do their best to protect the birds, not from any

humane motive but for fear that they should abandon the 'garcero' if disturbed too much; but this is always difficult. It is not like preserving a covert. *Persons who pay for the right of collecting the plumes have no scruples about destroying the birds. Their object is to get as much as they possibly can for their money.* The short or 'crosse' feathers from the Little Egret are *exclusively collected from birds shot for the purpose.* These feathers are so delicate that they are broken and torn in the bushes and thorns before they are moulted, and the dropped feathers are therefore valueless for trade purposes. The difference between feathers collected from birds which have been killed and feathers moulted by the birds is notable and easily recognized. The former, called 'live feathers' out here, are much superior in appearance, they possess greater brilliancy, smoothness, and elasticity; while the latter, called 'dead,' are dull, brittle, and dirty. Statements circulated that the feathers are collected from abandoned nests, and that Indians make their living by picking up moulted feathers, do not appear to be founded on fact. The birds are in full plumage after the month of June, and they begin to moult in October. The nesting and breeding season begins in August, during the height of the wet season, and by November the young birds are fledged. The Little Egret breeds somewhat later than the larger Heron. The season for collecting feathers begins about July and continues to the end of November."

H.B.M. Consul at Rosario, Santa Fé (Argentina), writes (Jan. 16th, 1909):—"Some few years ago, owing to the demand for feathers of the Heron and other birds and the high prices paid, the birds which formerly were very plentiful on the islands bordering all along the River Paraná were *almost exterminated* by the islanders and others, who made a profitable living in hunting them. Although this country has provided laws to prevent shooting out of season, such laws are seldom enforced—in fact, in the inland island districts where the birds exist, or used to, it would be *impossible*, owing to the vast district, *to enforce the laws.* As far as I am aware there are no 'Egret farms' established in the Argentine, and if shooting, as it is, is prohibited in some parts by landowners, it is solely with a view to prevent their herds being injured by inexperienced sportsmen."

Mr. J. Quelch, B.Sc. (Lond.), formerly Curator British Guiana Museum, Adviser to the Government for the granting of Licences to kill Wild Birds, writes (Nov. 29th, 1908):—"During a residence of seventeen years in British Guiana, and with an experience of travel ranging from the Eastern Orinoco to the borders of Surinam, and

inland into Brazil and Venezuela, along the eastern upper waters of the Amazon and the Orinoco, I have *never known nor heard of any such method of collection* as that described by Mr. Laglaize. Until the Government in Demerara put into force the stringent provisions of the Wild Birds Ordinance, a brisk trade was carried on by many people in the export of birds' skins, and largely of Osprey plumes. These feathers were obtained by *killing the Egrets in the breeding season* and cutting off the skin of the back on which the plumes were borne."

Mr. H. E. Dresser, author of 'The Birds of Europe,' writes (Nov. 16th, 1908) :—"All I can say is that I do not believe the statements in it. Out of hundreds of Egrets' nests which I have examined I have never found one in which were feathers of the birds themselves amongst the lining, certainly never a single one of the so-called 'Osprey' plumes. I never heard of any trade being done in moulted plumes, and do not believe the tale about the Egret colonies being farmed out for cast plumes."

Mr. Frank M. Chapman, Curator of the American Museum of Natural History at New York, writes (Nov. 30th, 1908) :—"So far as my own somewhat extended experience in our Southern States is concerned, I may say without fear of contradiction by those in a position to know that moulted Egret plumes are never gathered for commercial purposes."

Mr. Gilbert T. Pearson, Secretary of the National Association of Audubon Societies, writes (Dec. 1st, 1908) :—"In the most populous Egret colonies that I have ever visited, cast-off plume feathers are so scarce that an entire day's search would not reward the hunter with enough to decorate one lady's hat. *The feathers are never used for lining the nest*, as the latter is composed entirely of dead sticks and twigs."

Mr. H. E. Mattingley, in the 'Emu,' the organ of the Australasian Ornithologists' Union, writes :—"The *only method* by which the hunters are able to obtain Egrets' plumes in quantities is to *shoot the birds* on their nests."

ORNITHOLOGICAL NOTES FROM NORTH DEVON.

By Bruce F. Cummings.

On May 1st, while on Braunton Burrows, near the Hospital Ship, I heard a Grasshopper-Warbler (*Locustella nævia*) "reeling" for some minutes, and eventually caught a good view of the bird as it crept to the top of a bush in which it was concealed, and then flew off to another. This Warbler is a rare bird in North Devon, and Messrs. Matthew and D'Urban state, in 'The Birds of Devon,' that they were never able to detect it here. I watched subsequently, but I do not think the bird remained in the district.

A Green Woodpecker (*Gecinus viridis*), found frequenting the sandhills, was shot by Mr. C. Petherick, a mariner, who has "been abroad," and, to his surprise, it was *not* a Parrakeet.

A French Partridge (*Caccabis rufa*) was picked up under the telegraph-wires, near Barnstaple, in March of last year. Our wet climate seems very uncongenial to the bird, and it is rarely reported, at all events in the north of the county.

Three nests of the Buzzard (*Buteo vulgaris*) were said to have been found last spring in the woods around Combe Martin, while in the Lynton district this bird breeds even more freely; but the woodmen appear to have become corrupted beyond all salvation, and I am told that they robbed something like fifteen nests of the Buzzard last year around Lynton alone! I saw one nest at Lynton in the "lap" of an oak with a huge girth, which contained a couple of eggs which subsequently were stolen, much to my regret.

The Watersmeet Valley, Lynton, during the summer, is alive with the song of the Chiffchaff (*Phylloscopus minor*) and the Wood-Warbler (*P. sibilatrix*). I have never seen the latter before in any other part of the county, and it is, most distinctly, a very local bird. In the same valley I saw a pair of Redstarts (*Ruticilla phœnicurus*), which were obviously breeding. The

Redstart is rare in the Barnstaple district, and scarce everywhere in North Devon. They were the only pair of birds which I have found actually resident in North Devon.

While on Exmoor, near Brendon, in June last year I watched a certain bird for some time, and satisfied myself that it was a male Harrier, but I do not know which species. I think it must have been the Hen-Harrier. The female was also present, and the probabilities are that they were resident.

A Short-eared Owl (*Asio accipitrinus*) was flushed on Halsinger Down, Braunton, by members of the Botanical Walk, on July 16th. This is one more instance of this bird being in the Braunton district during the summer (*vide* Zool., January, 1907, p. 23).

During September I noticed a Ring-Ouzel (*Turdus torquatus*) in the Tavy Cleave, near Dridestowe, Dartmoor. On Exmoor, according to my own somewhat limited experience of the district and to the wider experience of others, the Ring-Ouzel has become very much reduced in numbers, and is not so often seen as it used to be.

There was a Purple Sandpiper (*Tringa striata*) on the River Taw in the second week of December, and also several single Grey Plover about, and numbers of Golden Plover. On Jan. 2nd I spent the best part of the afternoon watching two Brent Geese in the water near Crow at the estuary.

A White-tailed Eagle (*Haliaëtus albicilla*) was shot during March by a farmer near West Buckland, who saw it sailing over a field, and thought it was going to attack his lambs. The bird was set up by a Barnstaple birdstuffer, at whose premises I saw it afterwards. The bird was in poor plumage, and the tail was very much abraded, several of the shafts of the tail-feathers being quite bare of barbs. This indicates, perhaps, former captivity, as the state of the tail might well have been caused by being dragged over the bottom of a cage. The colour of the tail was a dirty sandy colour, the weight, in the flesh, ten pounds, wing expanse a little over seven feet. The bill was brownish black, and the cere was not yellow but of a dark brown shade. There were numerous bristles on the skin around the base of the bill. The specimen was that of a young bird. According to Messrs. Matthew and D'Urban, the majority of the

White-tailed Eagles obtained in this county have been immature birds.

I was glad to observe last spring a pair of Redshanks (*Totanus calidris*) on Braunton marshes, which evidently had a nest in the vicinity. I made a repeated search for the nest, and subsequently the gamekeeper, Mr. J. Petherick, stumbled across the young birds in a marsh not far from his house. The young were still unable to fly, and were accompanied by the old birds in great distress. Although the Redshank has often been suspected of breeding in the north of Devon, I am not aware that the suspicion has been hitherto definitely substantiated by fact. The only other record I have seen of its nesting in the county is one made by Mr. E. A. S. Elliott, who found young birds in June, 1894, at Slapton Ley, South Devon. The keeper told me he had never known the birds breed on the Braunton marshes before, nor had he ever seen them there in the breeding season until now, and my own observations agree with this. This year there were two pairs on the marshes in April, but latterly only one pair. This pair I have repeatedly watched, yet have not succeeded, nor has the gamekeeper, in finding either the young or the eggs.

On May 24th last the keeper showed me a nest of the Shoveler (*Spatula clypeata*) situated in a marshy field near the duck-ponds at the Taw estuary. The young birds had hatched out three days before, but the down and feathers, together with the broken egg-shells, were quite sufficient to bear out the statement of the keeper, who saw the female sitting. He is a careful observer of the birds of his district, and thinks a pair have bred on the ponds every spring since 1906, the year I first recorded this species as resident (Zool., January, 1907, p. 22).

NOTES ON THE FISHES OF JAPAN.*—No. IV.†

By Professor McIntosh, M.D., LL.D., F.R.S., &c.

Belonging to the group of the Mackerels and Perches is the pelagic *Istiophorus*‡ *orientalis*, T. & S., a Sail-fish of ten feet in length, and weighing 164 lb., having a huge dorsal fin which stands more than the depth of the body above it, and which may, as Dr. Günther says, be used as a sail before the wind. The dorsum of the fish has a dark green glow with bluish dots, the large dorsal fin being of a similar hue with bluish-black dots. The annual catch of this fish is about 11,823,687 lbs., and it is captured by means of harpoons, and generally consumed fresh. It is excellent food. As a rule it swims in pairs, with the huge fin erect and above water, especially in windy and rough weather, when the fishermen more easily approach it to hurl a harpoon; the line is then paid out until the fish, after furious efforts, exhausts itself. A figure on the same plate with the foregoing represents *Tetrapturus albidus*, Poey, which much resembles the Sword-fishes in habits, and is probably caught and eaten like the foregoing, though no remarks accompany it.

Three members of the Herring Family (*Clupeidæ*) are dealt with in this fascicle, *viz. Clupea pallasi*, C. & V., *Etrumeus micropus*, T. & S., and *Engraulis japonicus*, T. & S. The first, or North Pacific Herring, is perhaps the most important Japanese fish, both as food and as a fertilizer in farming. Like our own Herring, its record shows no diminution, and there are probably greater numbers of this fish in the Pacific—just as there are greater numbers of the Common Herring in the Atlantic—than any other species. Even were it possible to remove every other species of fish and those which prey on them, the supply for

* 'The Economic Fishes of Japan,' by Professors Otaki, Fujita, and Higurashi. No. I. vol. v., four plates. Shokwabo, Tokyo, Japan. 1909.

† Previous communications on this subject will be found in 'The Zoologist,' 1904, p. 247; 1906, p. 143; 1907, p. 450.

‡ *Histiophorus*, Günther.

man would be very considerable. Björnsön's statement that wherever a "school" of Herring touches the coast of Norway there a village springs up would be applied by Starr Jordan, with good reason, to Scotland, Newfoundland, and from Alaska to Japan. The authors of the 'Fishes of Japan' observe that the total catch for 1901 was 7,825,380 lbs., in 1902, 8,979,580 lbs., and in 1903, 9,746,680 lbs. The fishery takes place chiefly in March and April off Hokkaido, when the temperature of the water is 42·80° (6° C.), and frequent visits are made by the "schools" during the year to the shallow water inshore. Its eggs are deposited on the seaweeds and the bottom in masses, as in the British form, and each is said to deposit from 40,000 to 110,000 eggs, a considerably larger number, if correct, than in the case of the British Herring, which has from 20,000 to 47,000. The egg is transparent, 1 mm. in diameter, and with an oil globule. Fishing is by gill-nets and pound-nets, of which a sketch is given. Besides the Herring itself the roe is dried, and forms an important article of diet in Japan.

The Urume-iwashi (*Etrumeus microps*), the second form, is found on the eastern shores of Japan, keeping to the deeper water, and seldom visiting the bays except to spawn. It is caught by gill-nets, seines, and a portable pound-net called "Hachida-ami," which is set horizontally, the fishes being led to it by three boats carrying torches, two extinguishing their lights when they reach the net. The net is then lifted, and when nearly hauled the third boat also puts out its light. No statistics are given of the captures, but they are probably considerably less than is the case of the North Pacific Herring. It is consumed either fresh or dried in the sun.

The Japanese Anchovy, which resembles our own, extends from the south of Hokkaido to Kiushiu. Its egg is also pelagic and ovoid with a reticulated yolk. "Schools" of Anchovies visit the bays from April to June to spawn. They are captured by drag-seine, sweep-nets, and a kind of set-net. Besides being used as an article of food, it is employed as a fertilizer on farms, like the Sprat of the Firth of Forth. The fry are also largely used in the dietary of the Japanese, a sufficient proof of their great abundance, and in a country where such captures have been made for ages.

Two Gadoids, a group so interwoven with the fortunes of the British Fisheries, are alluded to in this fasciculus, *viz. Pollachius brandti*, Hilgend, the Madara or Common Codfish of Japan, and *Theragra chalcogramma*, a lean Gadoid. The former is found in latitudes above 40° N. on rough ground, the most important fishery being off the west coast of Hokkaido. It attains a length of 4–7 ft. and a weight of 38 lbs. It is chiefly used in the dried state, and the roes are also salted and dried. It spawns in January and February, and the pelagic eggs are 1·4 mm. in diameter, and are hatched in thirteen days at a temperature of 44·6° F. (7° C.), and therefore in this respect do not differ much from the British Cod. It is captured mainly by gill-nets and trawl-lines somewhat after the fashion of those on our own coast. Statistics are not given up to date, but, in 1901, 6,175,000 lbs. was the total catch. It will be interesting for future naturalists to watch the progress of this fishery in Japan, surrounded as it is by sea like Britain, and with the vast North and South Pacific oceans in continuity. History will probably repeat itself as the fishing industry in Japan extends.

The other Gadoid or Suketo-dara (*Theragra*), the Alaska Pollack, is a deep-water fish somewhat like a Whiting, though the tips of the pelvics are longer and the first anal short. It is a valuable food-fish widely diffused through the North Pacific, attains a length of two feet, and is the cause of important fisheries off the Japanese coasts. In 1895 the total catch was 11,717,690 lbs. It would have been instructive if the authors had added statistics of this and other food-fishes up to date, but perhaps such were not available. The Alaska Pollack spawns in the shallow waters in April, but no mention is made of the eggs, which are probably pelagic. It is captured by similar methods to the former.

The last of the series is the so-called "Dolphin" or Dorado (*Coryphæna hippuris*, L.), a fairly large, swift, predaceous fish well known in all warm seas, but which does not seem to reach so large a size (6 ft.) as in other seas, the Japanese form being 3½ ft. and having a weight of 13–15 lbs., for it is not indicated that capture of the smaller forms is preferred for economic purposes, as in the case of the Tunny. It is esteemed both in the fresh and the salted condition, and is as popular in Western Japan as

the Salmon in the North-east. It spawns in May and June, when it seeks the proximity of a wooded coast, and the young, which differ in their elongated form and in other respects from the adult, are stated to be seven or eight inches long in six months after they are hatched. It would be important, however, to follow their development from the egg. It is captured by hook and line, but also by an ingenious method with a decoy-bush and raft constructed of bamboo. When the fishes congregate under the raft they are caught by hooks baited with Squids. Another method is to encircle by means of two boats the decoy-bush and bamboos by a loop of a seine-net, whilst a third boat by and by enters the circle and drives the Dolphins into the fish-pocket by beating the surface of the water with sticks, and then the circle is closed. The plan of using strong bare hooks beneath the fishes and jerking them out of the water would seem to be adapted for this fish when congregated under the decoy-bush and raft of bamboos.

The Plates in this fascicle are four in number and represent eight species. Their execution would do credit to any country. The artist, K. Ito, is to be congratulated on his work, and similar commendation is merited by the lithographer, E. Koshiba.

TWO UNRECORDED 'CHALLENGER' HYDROIDS FROM THE BERMUDAS, WITH A NOTE ON THE SYNONYMY OF *CAMPANULARIA INSIGNIS*.

By James Ritchie, M.A., B.Sc., Natural History Department, The Royal Scottish Museum.

In the course of an examination—due to the kindness of Mr. R. Kirkpatrick, of the British Museum—of the type specimens of *Campanularia insignis*, Allman, collected by the 'Challenger,' two epizoic Hydroids were observed creeping upon the larger colonies. These must have been overlooked by Allman, for they are not mentioned in his account of the 'Challenger' Hydroid collection; and since they extend the geographical ranges of their species considerably, and are new to the fauna of the Bermudas, it seems worth placing their occurrence on record.

Lafoëa venusta, Allman, 1877.

A very few of the hydrothecæ of this species are scattered over the stems of *C. insignis*, but no gonosome occurred in connection with the specimens examined.

It is a striking fact, to which Dr. Jäderholm* has already drawn attention, that of the recorded occurrences of *L. venusta*, on each occasion the colonies were climbing over the stems and branches of *Obelia* (*Lytoscyphus*) *marginata*, Allman, and of it alone. This is true again of the 'Challenger' specimen, for, as stated below, *C. insignis*, Allman, 1888, is a synonym of *O. marginata*, Allman, 1877.

L. venusta appears to be confined to the tropical and subtropical portions of the western board of the North Atlantic Ocean. It has been recorded from Logger-Head Key, nine fathoms (Allman, 1877); from ten miles north of Zoblos Island (Clarke, 1879); from Anguilla, Antilles, one hundred to one hundred and fifty fathoms (Jäderholm, 1903); and the present

* Jäderholm, E., 'Arkiv för Zool., utg. af Kgl. Svenska Vetenskapsakad.' 1903, Bd. i. p. 274.

occurrence, from off the Bermudas, thirty fathoms, widens the geographical range considerably northwards.

Aglaophenia cylindrata, Versluys, 1899.

There is little to distinguish the trophosome of this species from that of *A. rhynchocarpa*, Allman, and indeed, were it not for the rather marked differences in the corbulæ—that of the former having been described by Jäderholm,* that of the latter by Allman† and Nutting‡—one would be tempted to regard the two designations as synonymous. In the examples growing over *C. insignis*, corbulæ are unfortunately absent, and in identifying them with *A. cylindrata* I have relied upon the different proportions of the hydrotheca, the less marked concavity of the anterior profile, and upon the fact that in every point the 'Challenger' specimens agree with the minute and careful description and figures of Versluys. There is considerable diversity in the shape assumed by the chitinous distal end of the hydrothecal keel.

Dimensions:—Length of colony up to 20 mm. Stem internodes: length, 0·29–0·34 mm.; diameter, 0·15–0·22 mm. Hydrotheca: length, 0·24–0·27 mm.; diameter at mouth, 0·14 mm.; proportion of adnate part of mesial sarcotheca to length of hydrotheca, less than one-third.

The species has hitherto been found only in the Antilles: from Testigos Islands (Versluys), and from Anguilla (Jäderholm). The present record, "off Bermudas, thirty fathoms," is much further north.

These species were climbing on the specimens described by Allman in 1888 as *Campanularia insignis*. Dr. Billard, having examined the type specimens of this species in the British Museum, declares that they do not differ from *C. juncea* (*Lytoscyphus juncea*) of the same author, both of these being synonyms of Esper's species, *Lytoscyphus fruticosus*.§

* Jäderholm, E., 'Arkiv för Zool., utg. af Kgl. Svenska Vetenskapsakad.' 1903, p. 297, pl. xiv. fig. 2.

† Allman, J. G., 1877, 'Mem. Mus. Comp. Zoo. Harvard,' vol. v. No. 2, p. 40, pl. xxiii. fig. 8.

‡ Nutting, C. C., 1900, "American Hydroids. Part I. The Plumularidæ," p. 90 (Spec. Bull. Smithson. Inst. Washington).

§ Billard, A., "Sur les *Haleciidæ*, *Campanulariidæ*, et *Sertulariidæ* du Challenger" (Comptes rendus Acad. Sc. Paris, Dec. 14th, 1908, p. 1).

I am not prepared to admit, however, that *L. insignis* and *L. juncea* are identical, for in the hydrotheca alone characters exist apparently sufficient to distinguish the two forms. Thus, while *L. juncea* has a hydrotheca shaped like the bowl of a clay pipe, with an almost straight abcauline and a strongly humped adcauline profile, *L. insignis* has an almost symmetrical hydrotheca, with both abcauline and adcauline profiles nearly straight. In the former, again, the proximal portion of the hydrotheca narrows suddenly in forming the peduncle; in the latter the transition from hydrotheca to peduncle is very gradual, the hydrotheca tapering gently from rim to base. Again, while in *L. juncea* the rim is bordered by a double line (Pictet),* in those hydrothecæ of *L. insignis* which I have examined only a single line is present, the thickened band of chitin lying exactly along the border of the cup, while in the Ceylon species it lies well within the margin.

Some difference seems to occur in the gonangia also, for while Congdon† figures for *L. insignis* both furrowed and smooth gonothecæ, scarcely any of which exceed the length of the hydrothecæ, Miss Thornely's figures of *L. juncea* show that the gonothecæ are considerably larger than the hydrothecæ, "about one-third as long again."‡ Pictet's figures, on the contrary, make the gonangia of *L. juncea* shorter than the hydrothecæ.

It seems improbable, therefore, that *L. juncea* and *L. insignis* are synonyms, but there can be no doubt that *Campanularia insignis*, Allman, 1888, is identical with *Obelia marginata*, Allman, 1877. The distinctions pointed out by Allman§ are insignificant. Indeed, the inverted cone shape which he attributes to the hydrothecæ of the latter describes exactly those of the former, while the "annular segment between the peduncle of the hydrotheca and its supporting internode"—characteristic of *Campanu-*

* Pictet, C., 1893, "Etude sur les Hydraires de la Baie d'Amboine" (Rev. Suisse de Zool. T. i. p. 37).

† Congdon, E. D., "The Hydroids of Bermuda" (Proc. American Acad. Arts and Sc. vol. xlii. No. 18, p. 467, figs. 10 and 12).

‡ Thornely, L. R., "On the Hydroida." In Report on the Pearl Oyster Fisheries of the Gulf of Manaar, by Prof. W. A. Herdman, F.R.S., Suppl. Rep. vol. viii. Royal Soc. London, 1904, p. 114, pl. 1, figs. 1, 1A.

§ Allman, J. G., 1888, "Report on the Hydroida" (Scientific Res. 'Challenger,' Zool., vol. xxiii. p. 19).

laria insignis—occurs on only a few hydrothecæ, and even there is abnormal, signifying the occurrence of a truncation of the hydrotheca and subsequent regeneration (*cf.* the same phenomenon as described by me in *Thyroscyphus tridentatus*).* The minute characters of the two "species" are in absolute agreement, and even the fact that the parasitic Hydroid, *Lafoëa venusta*, which hitherto has always been found on *Obelia marginata*, now occurs on *Campanularia insignis*, points to the identity of the two. It is significant also that Jäderholm found on a specimen of *Obelia marginata*, from the Antilles, the epizoites *Lafoëa venusta* and *Aglaophenia cylindrata*, both of which we have now recorded as occurring upon the type specimens of *Campanularia insignis*.

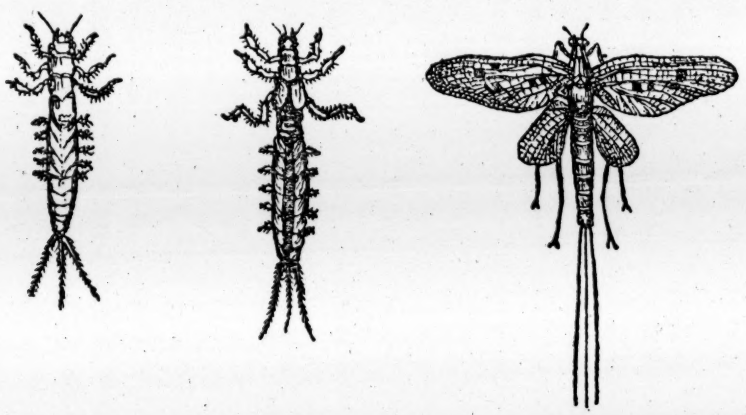
It is clear, therefore, that Allman's name, *Campanularia insignis*, is a synonym, and must fall into disuse. Since the characters of *Obelia marginata* place it in Pictet's genus *Lytoscyphus*, priority decides that *Lytoscyphus marginata* must be regarded (until the evidence of the alleged identity of *L. juncea* and *Campanularia insignis* has become more conclusive) as the name by which the species should be known.

* Ritchie, Jas., 1909, "Supplementary Report on the Hydroids of the Scottish National Antarctic Expedition" (Trans. Roy. Soc. Edinburgh, vol. xlvii. part i. p. 75).

NOTES ON THE COMMON MAYFLY (*EPHEMERA VULGATA*) AND OTHER SPECIES.

By Gordon Dalgliesh.

The name of "Mayfly" is a somewhat paradoxical one, since the perfect insect is found in greater numbers in June than May. Previous to this year (1909), the earliest date I had of its appearance was June 2nd, but this year I noticed it first on May 19th.



Larvule. *Nymph.* *Imago.*

Ephemera vulgata.

This early "hatch" was in all probability due to the long spell of lovely warm weather. From the 'Fishing Gazette' of May 22nd I quote the following notes:—

"Mayflies on May 15th and 16th on the Colne at West Drayton" (W. H. Bates).

"Mayfly appeared here on the Pinsley on May 15th. I saw to-day (May 16th) a fair basket made [Trout presumably] dapping with the Mayfly" (P. Summerville).

"Whilst having lunch in my fishing-hut I noticed several Mayflies rise to the surface of the river [Darenth], and they were blown away over the fields by a strong north-west wind" (W. B. Leaf).

The following extracts are taken from my note-book:—

"May 19th.—Common Mayfly up at Sweetwater, Witley,

Surrey, flying in bright sunshine at 3.30 p.m. There was a soft south-west wind blowing, and it was very warm. Only a very small 'hatch,' consisting of males only. A few specimens of *E. danica* were seen at Brook at 6 p.m., these also being males.

"May 19th.—Sweetwater, Witley, Surrey. Evidently a considerable 'hatch' had taken place during the past hours, judging from the shed nymph-pellicles floating on the water, and there were a considerable number of male flies on the wing at 3 p.m. Their flight was only of short duration, and kept up at intervals of from one to two minutes. During their periods of rest they settled on grass some way from the water; wind south-west, as before. When walking their pace is slow, and in their movements reminding one very much of that of the Mole-Cricket. Their front legs are seldom used for progression, but held straight in front in a supplicating manner, like those of a Mantis. Just after alighting the caudal setæ are spread considerably, but closed again directly afterwards.

"May 21st.—Numbers on the wing at 3.30 p.m. Day very hot, and a slight north-east breeze blowing. The flies seen were of both sexes. After pairing, which was of too short duration to allow of any close observations, the female insect flew on to a high branch of a fir-tree, and remained clinging wings downward. The male insect fluttered into the close herbage bordering the pond. From 3.30 p.m. to 5.30 p.m. I was absent from the place, but returned again at 6 p.m., and found swarms of females flying over the water and depositing their eggs. Now perhaps it is right to assume that some hours must elapse before the impregnated eggs are fit to be deposited, as, after pairing, I have never seen the female fly direct to the water, but, as before stated, fly up on to a tree. I had good opportunities for watching the female deposit her eggs, which was effected thus: flying slightly above the water she would dip every now and then as if seeking a suitable place. When this was found she would alight bodily on the water and jerk her abdomen up and down, wings and caudal setæ being widely spread. She then curved the end of her abdomen downwards, and with the three setæ spread out to their fullest extent and just resting on the water the eggs were dropped in a shower, which looked like minute white substances resembling the roe of a fish. The wings at this time were held clear

of the water, as these will not stand immersion, and once they get wet the fly is quite helpless. After the deposition of the eggs life seems to leave the insect, and it remains spread out flat, 'spread-eagle' fashion, in a condition that is technically known to anglers as a 'spent gnat.' I saw numbers of male insects alight for a few seconds on the water, and then fly away. This action on the part of the male gave rise no doubt to the supposition that 'after the eggs are passed into the water they are fertilized by the male,'* for I noticed that the males frequently flew on to the water just after oviposition. The oviduct is on the eighth abdominal segment, and as soon as the eggs are laid two small bladder-like sacs protrude from each side, filled apparently with air, which readily burst when a slight pressure is used.

"May 22nd.—Sweetwater. I arrived at the side of the water at 6 p.m., and found the Mayflies in prodigious swarms, the females predominating, and flying swiftly over the water depositing their eggs. The day had been very warm, and a soft south-west breeze blowing. De Geer says, from his observations, that 'the males greatly exceed the females.'"

As it will be seen by the above notes, according to my own observations, that on the first and second day only males were seen; therefore it is reasonable to assume that the males make their appearance first, and live for a considerably longer period than the females. According to the observations of former years, I note that males always put in an appearance first. The beautiful and wonderful dancing flight performed by the Mayfly is chiefly enacted by the male insect, and generally when the sun is very hot, and again towards the cool of the evening. If, during their flight, the sun is hidden by a passing cloud, they immediately sink to rest on a grass-stem. The female's one and sole duty is, after pairing, to rest awhile and then deposit her eggs; after that she dies. The eggs when first laid are enclosed in a thin transparent covering, which breaks as soon as it touches the water, and the eggs are dispersed and sink at once.

Reference was made in a former paper (Zool. 1908, p. 459) to the long anchoring threads attached to the eggs, and these threads I detected myself under the high power of the microscope. Wishing to get some eggs for microscopic examina-

* Swammerdamm, "Ephemeri vita &c."

tion, I took some glass tubes filled with spirit to the water's edge, and caught a female in the act of depositing her eggs, and induced her to lay in the tube. These eggs were examined immediately on my return home, and I then detected the threads referred to. A few days after I examined the eggs again, and the threads had all disappeared, dissolved by the alcohol. The eggs are provided with some sticky property. Some adhered persistently to the side of the glass tube, and it required a good deal of shaking and rinsing with alcohol to release them from their hold and sink in the liquid. The eggs are bean-shaped, and appear when first laid, and under a one-sixth inch objective, of a greenish colour. This colouring matter dissolves after a time in alcohol, and the eggs are then, as they appear when fresh to the naked eye, white.

I have never, so far, been fortunate enough to see the actual emergence of the fly from the nymph. Swammerdamm says:—"When the larvæ have left their burrows they make their way with all speed to the surface, and the transformation is effected with such rapidity that even the most attentive observer can make out little, except that the winged fly suddenly darts out from the midst of the water." The claspers of the male fly are shaped like pincers, and somewhat resemble those of an earwig. In the female they appear, under a powerful lens, like minute hooks.

"Is the Mayfly disappearing?" is a question that has been mooted lately. In the 'Fishing Gazette' for May 22nd is the following:—"There is no doubt that the Mayfly and many other water-flies have become extinct on many rivers; they seem to die out first in the upper parts, and gradually appear only lower and lower down. The clearing away of sedges, shrubs, bushes, and trees from the banks and neighbourhood of the rivers exposes the flies more to the exterminating influence of birds, wind, and weather, as well as by removing the natural shelter necessary for nuptial congress. For this reason I do not believe it is reasonable to expect any transplanting of the fly to be successful unless there is plenty of natural shelter. . . . I think that the plan of attempting to stock by transplanting larvæ offers the best chance of success."

The Surrey Trout Farm at Haslemere make it part of their

business to breed Mayflies for the express purpose of exporting the larvæ to ponds and streams from which the insect is absent. It is stated that eight hundred thousand eggs were obtained from one hundred and twenty females.* For the successful rearing of the larvæ running water is absolutely essential.

Ephemera danica, a slightly smaller species than *E. vulgata*, appears about the same time as the latter, and according to my experience is not a common insect; neither does it occur in anything like the abundance of that insect. The wings are clear without markings, and shine with a beautiful iridescent gleam. The caudal setæ are very long, about twice the length of head and body, and are two in number. The flight of this insect is much swifter than *E. vulgata*, and it never ascends to a very great height. The flight resembles that of a dragonfly (Odonata). They frequent streams, and those with a gravel and sandy bottom. I have frequently taken the male insect a long distance from any water, and both sexes are fond of settling in the middle of a road. The larva is of a dark brown colour, and I have taken them about half an inch in length. They become much paler, almost transparent, before emergence. They have three caudal setæ.

At Frensham Great Pond, in South-west Surrey, on May 22nd, I found that thousands of the small Mayfly mentioned previously ('Zoologist,' 1908, p. 458) had "hatched" out, and left their pseudo-imago skins and nymph-pellicles on posts about twenty yards from the water, and these were also thickly intertwined among the herbage by the roadside in soft white masses, which from a distance resembled the hairy fruit of the willow.

The nymph of this small fly, unlike that of *E. vulgata*, leaves the water and climbs up a reed† to undergo its metamorphosis, and finding their pellicles so far away from the pond was at first astonishing until I realized what had happened, not thinking it possible that the nymph could have crawled all that distance. What had happened no doubt was what was witnessed by Réaumur.

* 'Fishing Gazette,' May 22nd, 1909.

† I found the reeds by the pond-side covered with nymph-pellicles like the cast skin of a dragonfly larva.

He says:—"The cast skin is sometimes carried up into the air, clinging to the tail-filaments, and an *Ephemera* in this state seems twice as long as usual."

The great difficulty in collecting *Ephemeridæ* for purposes of identification is their extreme fragility and the tendency to shrivel up when dry, until all the chief features are destroyed. The specimens I have collected I now keep in spirit in glass tubes. This method of preserving specimens I have found most satisfactory, as the spirit hardens them, and they can afterwards be handled with comparative safety. For their capture I have found a small net made of the finest possible gauze of great service.

NOTES AND QUERIES.

MAMMALIA.

Erythristic Variety of the Field-Vole.—On July 7th I had brought to me a curious variety of the Field-Vole (*Microtus agrestis*) which had been found dead in a clover-field near Shrewsbury. The upper parts were of a pale fawn-colour, the under parts white. The animal was a full-grown male.—H. E. Forrest (Shrewsbury).

AVES.

The Lesser Redpoll (Linota rufescens) at Hampstead. — The Lesser Redpoll has again bred here this year. Two or three pairs returned to the Heath by the latter end of May, and on June 9th I found a nest just completed, and which was placed in the top of a furze-bush. Five eggs in all were laid in this nest, and incubation lasted fourteen days; the hen bird commenced to sit when the first egg was laid. I have noticed that this bird, like some others, occasionally swallows the fæces of its young, but whether this practice is only resorted to by birds when they know or suspect themselves to be under observation would be difficult to ascertain. The Lesser Redpoll is a very late breeder here, but the vegetable down which seems so essential for the lining of their nests could not be procured much before the end of May or the beginning of June.—H. Meyrick (Holly Cottage, The Mount, Hampstead, N.W.).

The Occurrence of the Bean Goose in Cumberland.—In Messrs. Thorpe and Hope's article in 'The Zoologist' (*ante*, p. 187) on the observations made by the Natural History Bureau for the County of Cumberland numerous references are made as to the occurrence of the Bean Goose by Mr. Nichol, for instance: March 19th, flock seen flying; March 12th, some seen; Oct. 5th, a flock of forty seen; Dec. 30th, flock of eighty seen; and also on Dec. 7th, flock of Greylag seen. As the Bean Goose is a comparatively rare species in England and Scotland, and when found usually as a stray bird or birds in a flock of other Grey Geese, and, moreover, it being quite impossible to identify between the four species when on the wing and silent, how, may I ask, did Mr. Nichol know that they were Bean Geese? No mention is made

of the Pink-footed Goose, which is without doubt the most plentiful of the Grey Geese frequenting England and Scotland, at all; and did not the birds he called Bean rather belong to this species? The flock of Greylag seen on Dec. 7th is also open to some doubt owing to the date, but is possible. If Mr. Nichol is a wildfowler he will know that it is impossible, with any degree of certainty, to identify between the four species when in a skein, if silent, and even when in a gaggle only the White-fronted can be identified with any certainty. No mention is made of any being shot or identified in that way, so I conclude, as the letterpress says, that he only identified them as Bean and Greylag at a distance. Of course, the calls of all the Wild Geese, both Grey and Black, differ, but some of them so little that they must have all been heard again and again, and birds shot out of each particular skein or gaggle heard, before the best observer can be certain of them. With all due respect to the gentlemen concerned, I think that Bean should read Pink-foot, especially as many fowlers do not know the Pink-foot under that name, but class both Bean and Pink-foot under the former head, although, of course, quite a distinct species with characteristics quite its own. — H. W. Robinson (Lansdowne House, Lancaster).

Nesting of the Wigeon in Cumberland. — On the short note mentioning Messrs. Thorpe and Hope's record of the breeding of the Wigeon in Cumberland on April 30th, 1908, at Bassenthwaite (*ante*, p. 191), may I be allowed to make a few comments, and ask incidentally if the small feathers among the down were identified correctly, and, further, whether or no this is meant to be the first record for that county and place? If the latter is the case, may I quote Mr. W. J. Farrer's note in 'The Field' for Aug. 1st, 1903, as follows:—"In reference to my note on Wigeon nesting in Bassenthwaite, I may state that I have for some years suspected the bird of breeding in the locality, as I have seen three or four pairs all through the spring and summer months. This year [1903] I kept careful watch on one pair from April 20th, when first seen, until May 10th, when I found a female bird sitting on ten eggs. The nest was situated close to the edge of a small rock on the marshes at the head of Bassenthwaite Lake. I am quite sure as to the identity of the birds, and have seen them many times since up to a month ago (July)." I know myself for a fact that the Wigeon does nest at Bassenthwaite, as on July 13th, 1904, I saw a female followed by a brood of young about the same place where Mr. Farrer found his nest the year before. Great care, of course, must always be taken in identifying the eggs of

the Duck, as the following incident will show: In 1901 Mr. Robert Patterson recorded the nesting of the Wigeon near Belfast. The bird was not identified, but eggs and down agreed with those of that bird. This record was accepted everywhere until two years later, when the same gentleman wrote and contradicted the statement, as on further examination of the down the small feathers found therein proved the nest to be that of the Shoveler. It may be of interest to state that a Wigeon nested in the early summer of 1907 on the private lake of a friend of mine in North Lancashire. On the lake, which is natural and of considerable size, he placed a pair of pinioned birds of which the female shook off her pinions almost at once, and disappeared for some weeks to reappear with a brood of young, which she had apparently hatched on a smaller lake in the vicinity. The drake remained on the large lake all the time, being finally shot accidentally at the flight as recently as last November, when he too had apparently just shaken off his pinions, judging from the tremendous height at which he was flying. Incidentally it may be mentioned that these young Wigeon and their mother were as wild as possible, far more so than the foreign birds which arrived in the autumn, and not one of them was shot. Did Messrs. Thorpe and Hope actually see the bird settling on her eggs, or only near the nest? If the latter only, that is no evidence of the nest being her own, just as my evidence of the brood there on July 13th is of little value, as the brood might have been that of a Mallard or some other species following what was undoubtedly a hen Wigeon.—H. W. Robinson (Lansdowne House, Lancaster).

Redshank (Totanus calidris) carrying Young (?).—Mr. A. H. Patterson, in his Notes on Mud-flat Birds, says (*ante*, p. 211), "Whether it [the Redshank] carries its young as the Woodcock does at times I am not sure, but I strongly suspect it." Facts have come to my knowledge which I think go to prove that this is not the case. Redshanks have of recent years nested close to the town of Stafford, and between the Sewage Farm they frequent and a small muddy pond, close to which there is generally a nest, runs a main road, upon which there is much traffic. A few years ago, and again this year, after the young were hatched, the old birds have been seen in great distress owing to their not being able to get their young ones across this high road, and on *both* occasions the young have been caught by a humane signalman, who occupies a signal-box on the railway close by, and carried to the sewage marsh, apparently to the great satisfaction of the parent birds. Now if the Redshank carried its young I think the

old birds would have done so in the instances I have given. I believe on the first occasion the distress of the old birds lasted several hours before the signalman discovered the cause of their trouble.—JOHN R. B. MASEFIELD (Rosehill, Cheadle, Staffordshire).

MR. PATTERSON, in his interesting article, "Some Mud-flat Bird-Notes" (*ante*, p. 211), referring to the Redshank, says: "Whether it carries its young as the Woodcock does at times I am not sure, but I strongly suspect it." A few years ago a relative of mine, who has all his life lived close to the haunts of this bird, told me that he had seen a Redshank on the wing carrying a young bird between its legs. This he did without any leading up to the subject or reference to this habit in the Woodcock. He evidently considered it a very remarkable thing, and asked me whether I had ever known of a like occurrence. —G. T. ROPE (Blaxhall, Suffolk).

Notes from Wilsden, Yorkshire.—From an ornithological point of view the present breeding season so far has had some quite exceptional features. The Cuckoo up to the end of May was exceedingly scarce; not more than perhaps four Cuckoos had arrived in all Bingley Woods. At or about this date we received large accessions, but, strange to say, I have sought assiduously in all likely places to find a Cuckoo's egg, but have failed up to the present; neither has one been recorded as having been found by anyone else, though during the month of June Cuckoos have been quite abundant, this late arrival in such numbers in June having probably been caused by the presence of myriads of caterpillars, upon which they must have largely fed. A similar movement among Cuckoos occurred here some three or four years ago. The scarcity of their eggs in June can only be explained on the supposition that they laid their eggs previously to their coming here. When at Hastings Museum in May last my son showed me the nest of a Pied Wagtail which had been found near Hastings, and which contained four eggs and one egg of the Cuckoo. Previously to the egg of the Cuckoo having been deposited the nest had contained six eggs, but at the time of the introduction of the egg of the Cuckoo two of them mysteriously disappeared. Whether these were removed by the Cuckoo—and I have little doubt on this point—or through some other agency, it is unquestionably true that nests containing a Cuckoo's egg or eggs have seldom their full complement. Prof. Newton's explanation of this point, in his monumental work, 'Dictionary of Birds,' seems somewhat weak and inadequate to account for the phenomenon in question. My son also showed me the nest

of a Linnet containing two Cuckoo's eggs and one egg of the dupe, while recently, when in Monsaldale, in Derbyshire, a person told me he had found the egg of a Cuckoo in the nest of a Thrush.—E. P. Butterfield (Wilsden).

PISCES.

A Monster Pike.—On the 16th May last, when Salmon-fishing on Lough Conn, Co. Mayo, Mr. Charles Scroope, of Ballina, captured a monster Pike, weighing thirty-five pounds, on an artificial minnow. Its dimensions were: Length, 47 in.; girth, 24½ in.; length of head, 13 in.; and spread of tail, 11 in. It was in splendid condition, and I never saw a fish of such depth of body. The Pike was taken on the Salmon run in about five feet of water. It was weighed and measured immediately on being brought ashore in the presence of four credible witnesses, so there is no mistake as to its weight or dimensions.—Robert Warren (Moy View, Ballina).

NOTICES OF NEW BOOKS.

The Foundations of the Origin of Species; a Sketch written in 1842 by Charles Darwin. Edited by his son, FRANCIS DARWIN. Cambridge: Printed at the University Press.

THIS Essay has been printed by the Syndics of the Cambridge University Press for presentation to the Delegates of Universities and other learned Societies attending the celebration at Cambridge on June 22nd of the centenary of the birth of Charles Darwin, and of the fiftieth anniversary of the publication of the 'Origin of Species.' We read that the MS. was hidden in a cupboard under the stairs which was not used for papers of any value, and only came to light after the death of Mrs. Darwin in 1896 when the house at Down was vacated. It is a digest of the principles on which seventeen years later the book of the nineteenth century was to be the result. The "foundation," as it has well been called, is a landmark, it indicates the evolution of the 'Origin of Species,' and bears witness to the prolonged patience and concentration of thought and study attending its composition. Is the effect of this epoch-marking publication yet fully estimated? If its mission is considered to begin and end with biology, then its force is still unappreciated, for it has modified and influenced all contemporary thought even in quarters where biology is a stranger. Theology was confronted with the relation of man to other animals, so far at least as his corporeal existence is concerned, and the survival of the fittest became an axiom with the philosophical historian and the practical statesman. We are familiar at all events with the phrase, "The Method of Descartes," but have we sufficiently appraised either the "Method of Darwin" or the subtle way in which his patient construction has become a mental formula, one now alike used by opponents and disciples? Even if imagination may anticipate a time when his conclusions may be

neglected, his "Method" will endure and become hoar with time.

The doctrine of the struggle for existence is unanswerable; it could be interpreted by the "man in the street" as equivalent to the saying that all living creatures, plants as well as animals, have to "fight it out among themselves." The result of that struggle and the lines on which it is fought is the cardinal thesis of Darwinism, and has made that question the dominant one even with biologists who may not be considered as altogether orthodox "selectionists." The 'Origin of Species' is not dependent on its cleverness but on its wisdom; it is not to be patronised as the brilliant theory of a genius, but to be valued as the production of a sage; its greatest danger is from fiery apostles who insist that it is to be accepted as a revelation once given and for all time. If it has largely explained the *how*, it has not, nor could it have been expected to have, demonstrated the *why*.

The Life of a Fossil Hunter. By Charles H. Sternberg. New York: Henry Holt & Co. London: George Bell & Sons.

If any book can convey to the general reader a conception of the zoological past by the palæontological record, this is the one. Much is taught by personal narrative, for such books are much more widely read than purely scientific publications, and the suggestions of the first are more easily appreciated by the ordinary reader than the more scientifically arranged facts of the latter, which by the uninitiated are easily misunderstood. In Darwin's well-known narrative of his voyage in the 'Beagle' how many palæontological and geological conclusions have been widely disseminated and assimilated among readers who may possibly have read none of his other works! As Mr. Sternberg remarks near the end of his book: "The life that now is, how small a fraction of the life that has been! Miles of strata, mountain high, are but the stony sepulchers of the life of the past."

The life of a fossil-hunter is a somewhat new experience. We are familiar with those of animal and plant collectors, but have not before, at least so far as the present writer is aware, realized the adventures, hardships, and methods of one who may be said to have lived among ancient and prehistoric surroundings, and

to have studied and discovered remnants of a vanished zoology. As we peruse these pages we feel, as evolutionists, how dim is the past, how unknown the future; perhaps when we know more of the first we may hazard some guesses as to the second. Mr. Sternberg truly observes that fossil-hunting "is as capable of improvement as any other form of human endeavour." Once "we went over, in a few months, all the chalk in Western Kansas. . . . Now it takes us five years to get over the same ground. Then we dug up the bones with a butcher knife or pick, and packed in flour sacks with dry buffalo grass which we pulled with our fingers. Some strange animals were created by Cope and Marsh in those early days, when they attempted to restore a creature from the few disconnected bones thus carelessly collected. Now we take up great slabs of the chalk, so that we can show the bones *in situ*, that is, in their original matrix, so that they may be the more easily fitted together in their natural relations with each other."

Some interesting reminiscences of the late Prof. E. D. Cope in the field are given by Mr. Sternberg:—"Cope's indefatigability, too, was a constant source of wonder to us. We were in excellent training, after our strenuous outdoor life in the Kansas chalk-beds, while he had just been working fourteen hours a day in his study and the lithographer's shop, completing a large Government monograph, writing his own manuscript and reading his own proofs. When we first met him at Omaha he was so weak that he reeled from side to side as he walked; yet here he climbed the highest cliffs and walked along the most dangerous ledges, working without intermission from daylight until dark." "He used to talk to me by the hour, arranging the living and dead animals of the earth in systematic order."

Sternberg did not only collect for Cope, but subsequently for Zittel, as the contents of the Munich Museum testify. As an ardent palæontological enthusiast he has not made a fortune by his long service, but he has his reward: "I have accomplished the object which I set before myself as a boy, and have done my humble part towards building up the great science of palæontology. I shall perish, but my fossils will last as long as the museums that have secured them."

EDITORIAL GLEANINGS.

'Christ's College Magazine' (Cambridge), xxiii. No. 70, is a "Darwin Centenary Number." Mr. T. E. Pickering writes on "Shrewsbury Days"; Mr. A. E. Shipley on "Charles Darwin at the Universities"; the Master of Christ's College contributes a most interesting and original article on "Christ's College in the Years preceding the Entry of Charles Darwin"; "Darwin and the Linnean Society" is from the pen of Dr. B. Daydon Jackson. "Letters from Charles Darwin to Alfred Russel Wallace" (two of which are published for the first time), with Notes by Mr. Francis Darwin; "Present-day Darwinism," by Mr. Leonard Doncaster; and "Darwin's Animals and Plants," by Mr. T. H. A. Marshall, complete another publication to be added to the Darwinian bibliography.

In his copy of the "Journal of Researches" the Editor some twenty years ago affixed the following cutting, which it may be interesting to reproduce at this time:—

"'The Japan Weekly Mail' states that the 'Beagle,' in which Darwin made his memorable voyage, is now (1888) used as a Japanese training-ship. It was then stationed at Yokosuka, a naval station in the Bay of Yedo, not far from Yokohama."

Dr. R. L. Garner has recently contributed to the 'Evening News' (June 15th) an article somewhat sensationally headed "Do Monkeys Speak?" We have frequently alluded to the possibility of man being ultimately enabled to communicate with other animals, but this does not imply a belief in the universality of articulate language, but rather in the majority of cases to what is known as the "gesture language." Dr. Garner states that:—

"For the last twenty years my time has been chiefly devoted to the study of animal speech or methods of inter-communication, and mainly to that of Monkeys. For the last five years I have lived the life of a recluse in the great forest of the Nkami on the south-east side of Lake Fernand Vaz, about two degrees south of the Equator on

the west side of Africa. In this vast forest live countless numbers of Monkeys, representing several different species, many families of Chimpanzees, and some Gorillas, all in a state of primordial nature.

"From some of the literature that finds its way into my jungle retreat one might suppose that any casual visitor to a zoological garden can acquire a sufficient knowledge of the Monkey language in a few hours to enable him to discuss the subject with great familiarity, but I must admit that my progress in learning it has been slow and tedious, and I have found it very difficult to grasp the simian idea so easily.

"I find it very difficult to reduce the vague and often ambiguous meanings of animal speech sounds to any exact formula of human speech, and during the whole twenty years of my studies about ninety words scattered among more than a dozen species embrace the whole vocabulary that I have translated with comparative certainty. During that time I have had access to several hundred specimens, many of them under the most favourable conditions and with all available accessories to aid me, but nine words are the greatest number that I have interpreted in any one language of the Monkey races. On some of those I worked for years, and in the meantime often had to modify my deductions and sometimes entirely abandon them.

"By long experience I find that the best way to learn the language of a species is by rearing a young specimen by hand, and in the process one absorbs, as it were, the meaning of the sounds it gradually develops, for such is their way of acquiring speech. I estimate that during the earlier period of life a Monkey baby develops, relatively, about as much in a day as a human baby does in a month; or, in other words, that one day of a baby Monkey's life is about such a part of its whole life as one month is of a human baby's life."

Dr. Garner gives the following instances of his success:—

	Nictitans.	*Ludios.*
"'I want'	quih	ki-uh.
'Where?'	ou-rh	kri-i.
'Here'	eu-nh	hu-hu.
A warning	khi-iu	ahr-r.
Imminent danger	khi-iu-hou	—
'Hark'	chu-h	ande.
'What'	—	ek-e.
'Mother'	hri	ou-oah."

We have received the Report for 1908 of the Zoological Gardens at Giza, near Cairo, by the Director, Capt. Stanley S. Flower. We read that an unusual meteorological event in 1908 was the heavy rain on April 24th; the rain continued nearly all day, and left many of the paths and paddocks covered in standing water. This drenching, combined with the subsequent infiltration of subsoil water from the Nile (the Nile flood having been higher than in the preceding ten years), produced a very damp summer in the Gardens, and had a deleterious effect on some of the desert animals, especially the Addax and Sabre-horned Antelopes. Forty-four accidental deaths occurred, including sixteen mammals, twenty-four birds, three reptiles, and one batrachian. The incidents are thus summarized, and should claim the attention of those who possess collections of living animals:—Two Lemurs killed fighting other Lemurs of the same species; one Sudan Jackal killed fighting other Jackals of the same species; five Egyptian Jackal puppies killed by their parents; one Ratel died from injuries received prior to its arrival in Giza; two newly-born Hedgehogs killed by adult Hedgehogs in the same cage; one Fat-tailed Mouse killed fighting others of the same species; one female Oryx died from injuries received from the horns of a male of the same species; one male Addax died from injuries received from the horns of a female of the same species; one young male Nylgai killed itself in a panic by dashing against the railings of its paddock, frightened from some unknown cause; one female Arui Wild Sheep died from injuries received from the horns of other sheep of the same species; three Indigo Finches killed fighting others of the same species; two Cardinal-birds killed fighting others of the same species; two Yellow Sparrows killed fighting others of the same species; one Parrakeet and one Lark met with fatal accidents; one Flamingo killed by an Adjutant Bird; one Spur-winged Goose killed by a Hippopotamus; four nestling Egrets killed by adult Egrets of the same species; one Ibis and one Spoonbill killed by other birds inhabiting the same aviary; one Partridge killed fighting; one young Partridge found drowned; one Crowned Crane killed by a Senegal Stork; one nestling Purple Coot killed by adults of the same species; one Purple Coot killed by others of the same species; one Purple Coot and one Gull killed by other birds inhabiting the same aviary; two Tortoises found drowned; one Waran Lizard killed by another of the same species; one small Toad swallowed by a larger Toad.